



CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT (CAASD)

Safe Flight 21 Implementing Broadcast Services

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ICNS Conference, Fairfax, VA

3 May 2005



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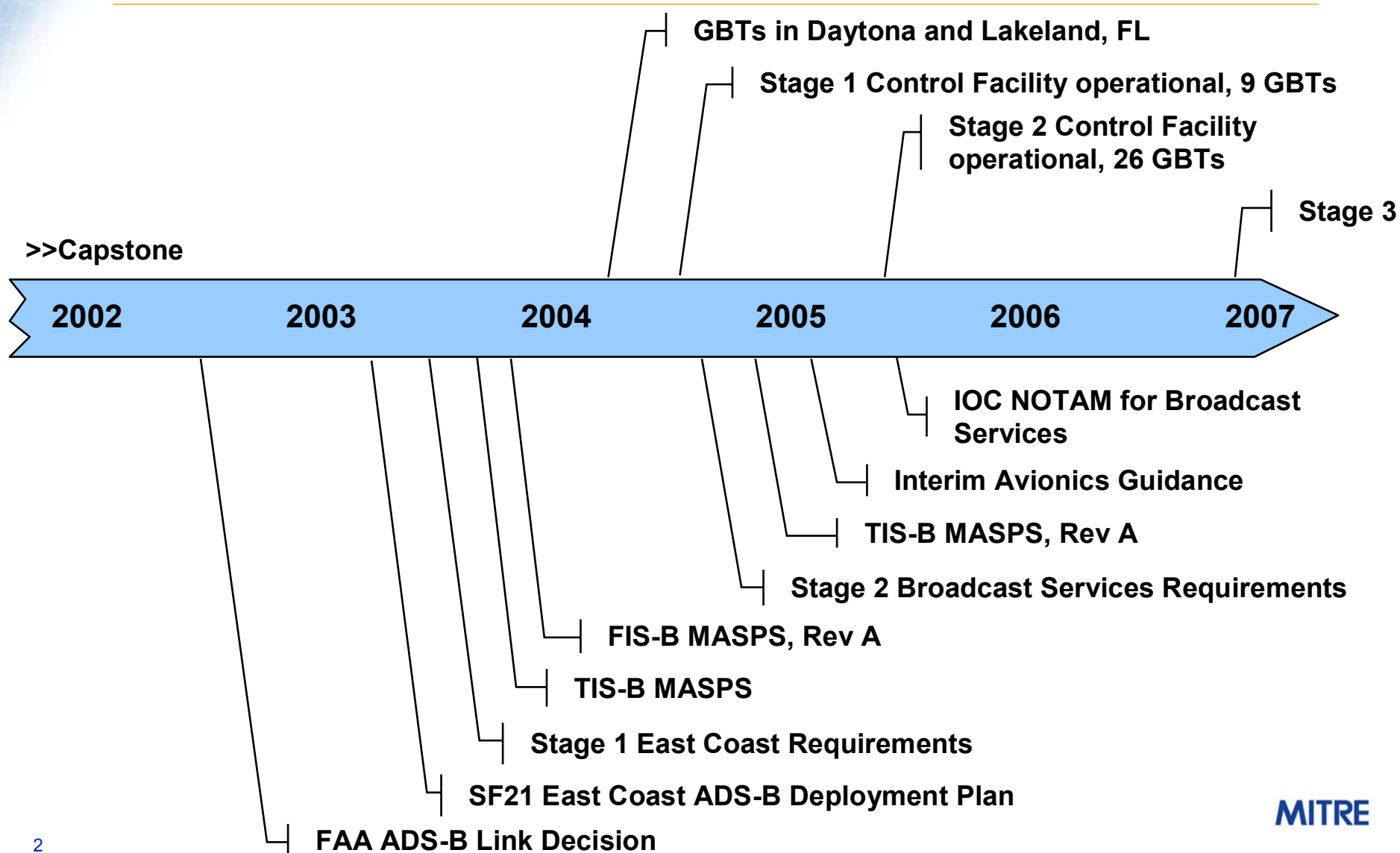
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Broadcast Services Implementation Time Line





Broadcast Services Implementation

Stage 1 Capabilities

- **Operational June 2004**
- **~25 ground stations**
- **TIS-B Service - Many system requirements met**
 - Regional tracking using separate trackers
 - Multi-sensor tracking on reinforced targets
 - Basic report filtering (e.g., Mode A code)
 - ~60 radar feeds
- **FIS-B Service – All system requirements met**
 - Graphical precipitation
 - METARs & TAFs



Broadcast Services Implementation Stage 2 Capabilities

- **Operational May 2005**
- **~70 ground stations**
- **Service Availability goal >99% (<48 hrs per event)**
- **TIS-B Service - Most system requirements met**
 - **Wide area tracking using consolidated tracker**
 - **Multi-sensor tracking on all secondary surveillance targets**
 - **Full report filtering capabilities**
 - **Surveillance sensor monitoring**
 - **Service Status reporting to users**
 - **~100 radar feeds**
- **FIS-B Service – Additional products added**
 - **AIRMETS, SIGMETS, Convective SIGMETS, Winds Aloft**
 - **Graphical TFR NOTAMs on the wish list**

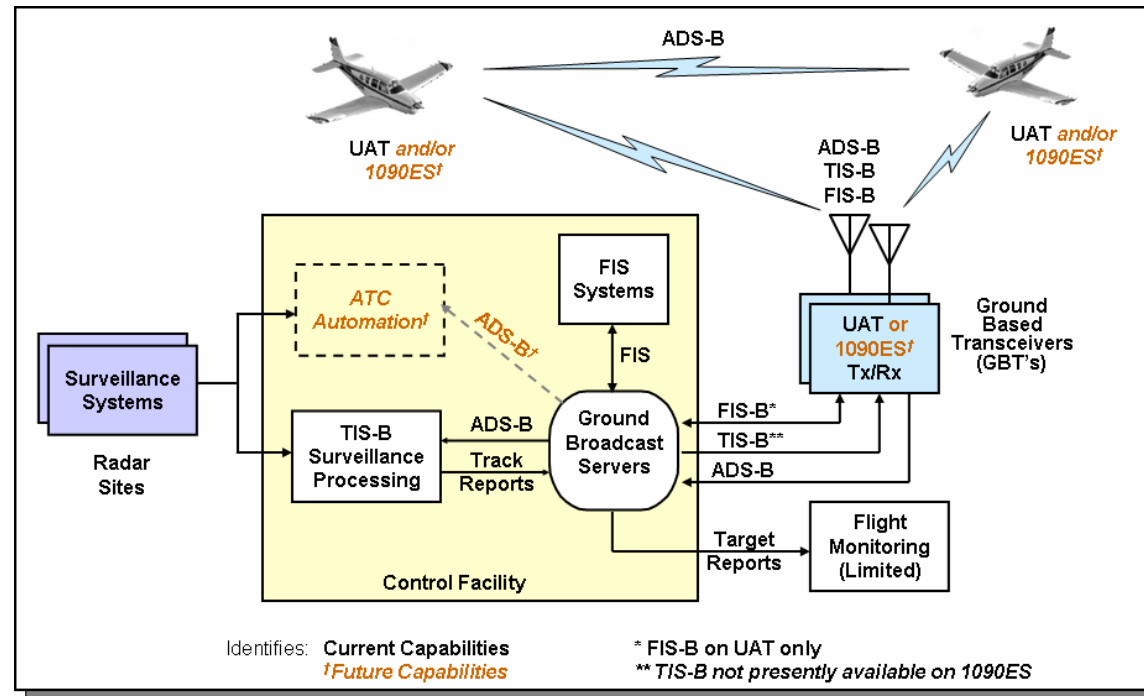


Broadcast Services Implementation Stage 3 Capabilities

- **Operational in early 2007 (estimated)**
- **Capable of delivering national service**
- **~ 500 ground stations**
- **Service Availability goal >99.9% (<10 min per event)**
- **TIS-B Service - All system requirements met**
 - **Wide area tracking using networked trackers**
 - **ADS-B Rebroadcast Service (UAT and 1090ES)**
 - **~300 radar feeds**
- **FIS-B Service – Additional products added**
 - **Planning underway**

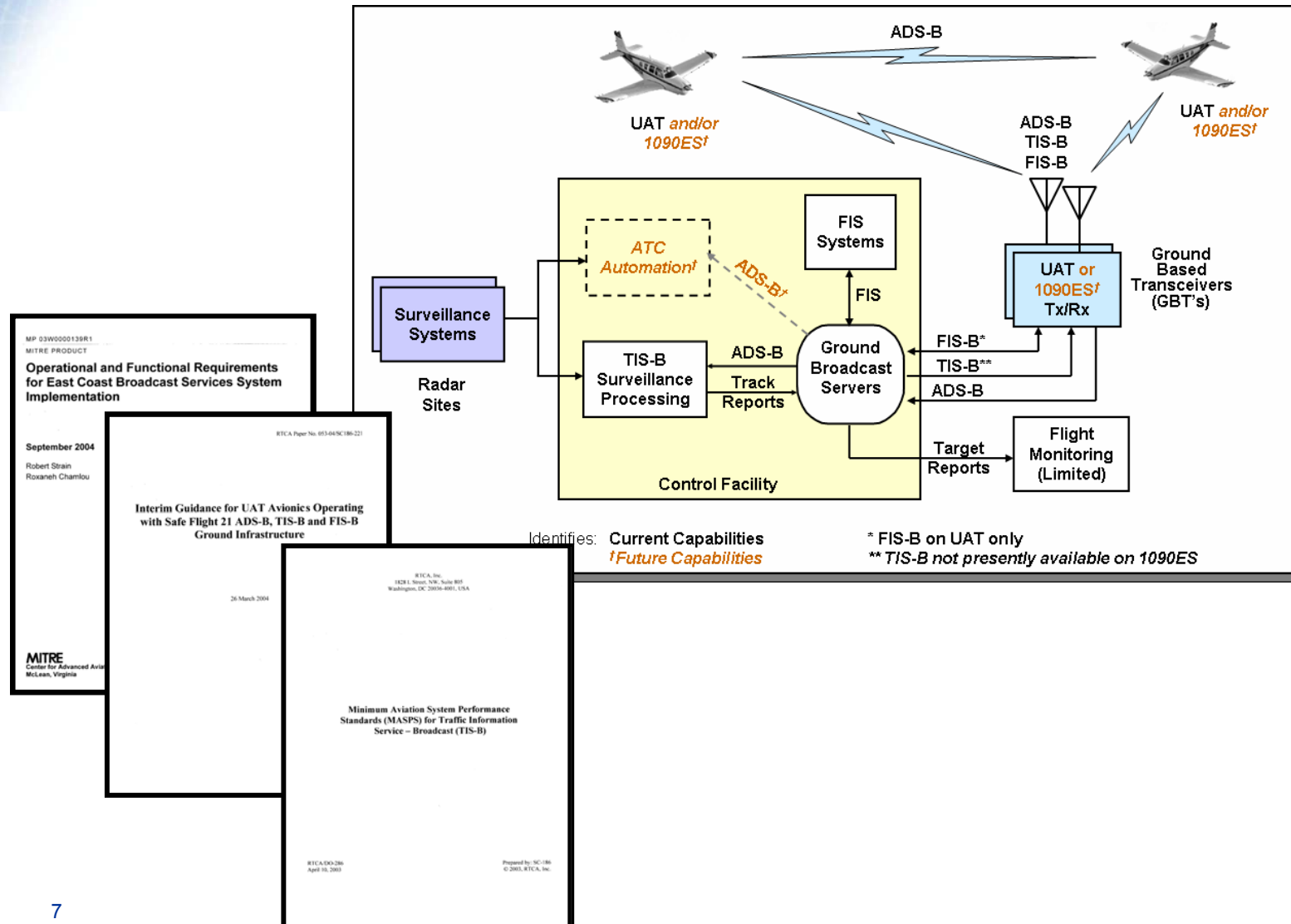


Broadcast Services Implementation System Architecture & Requirements



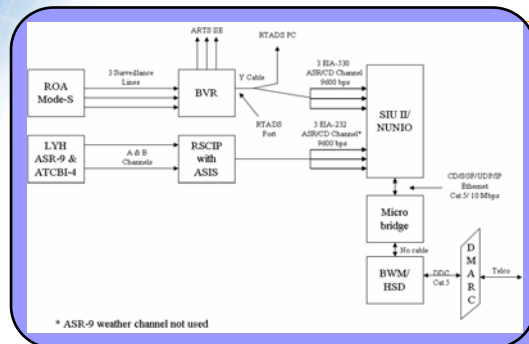


Broadcast Services Implementation System Architecture & Requirements



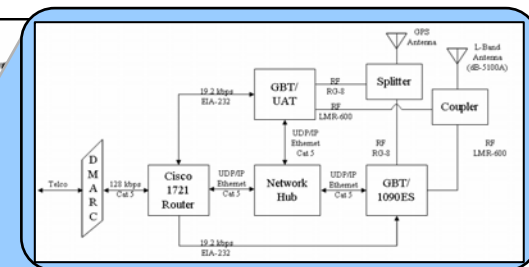


Broadcast Services Implementation System Architecture & Requirements



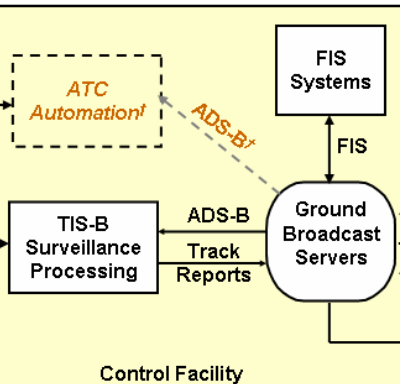
ADS-B

ADS-B
TIS-B
FIS-B



Surveillance
Systems

Radar
Sites



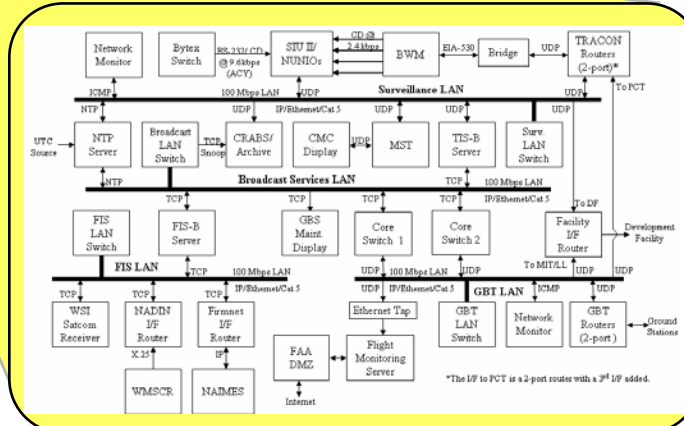
UAT or
1090ES[†]
Tx/Rx

FIS-B[†]
TIS-B^{**}
ADS-B

Target
Reports

Flight
Monitoring
(Limited)

Control Facility



MP 33W000138R1
MITRE PRODUCT
Operational and Functional Requirements
for East Coast Broadcast Services System
Implementation

September 2004
Robert Strain
Roxaneh Chamliou

Interim Guidance for UAT Avionics Operating
with Safe Flight 21 ADS-B, TIS-B and FIS-B
Ground Infrastructure

26 March 2004

MITRE
Center for Advanced Avia
McLean, Virginia

Minimum Aviation System Performance
Standards (MASPS) for Traffic Information
Service - Broadcast (TIS-B)

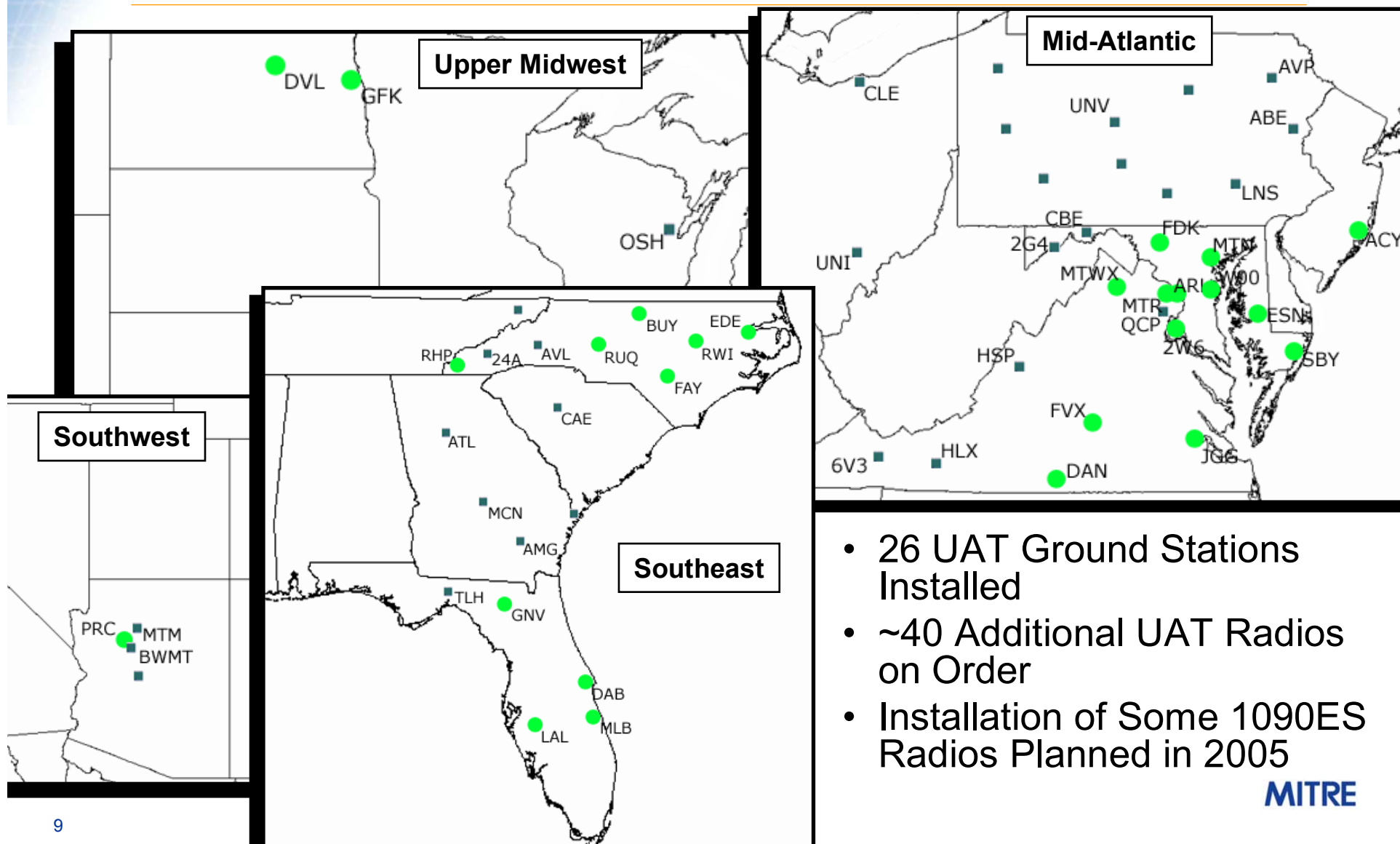
RTCA/DO-286
April 10, 2003

Prepared by: NC-186
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Broadcast Services Implementation Ground Station Installation Status



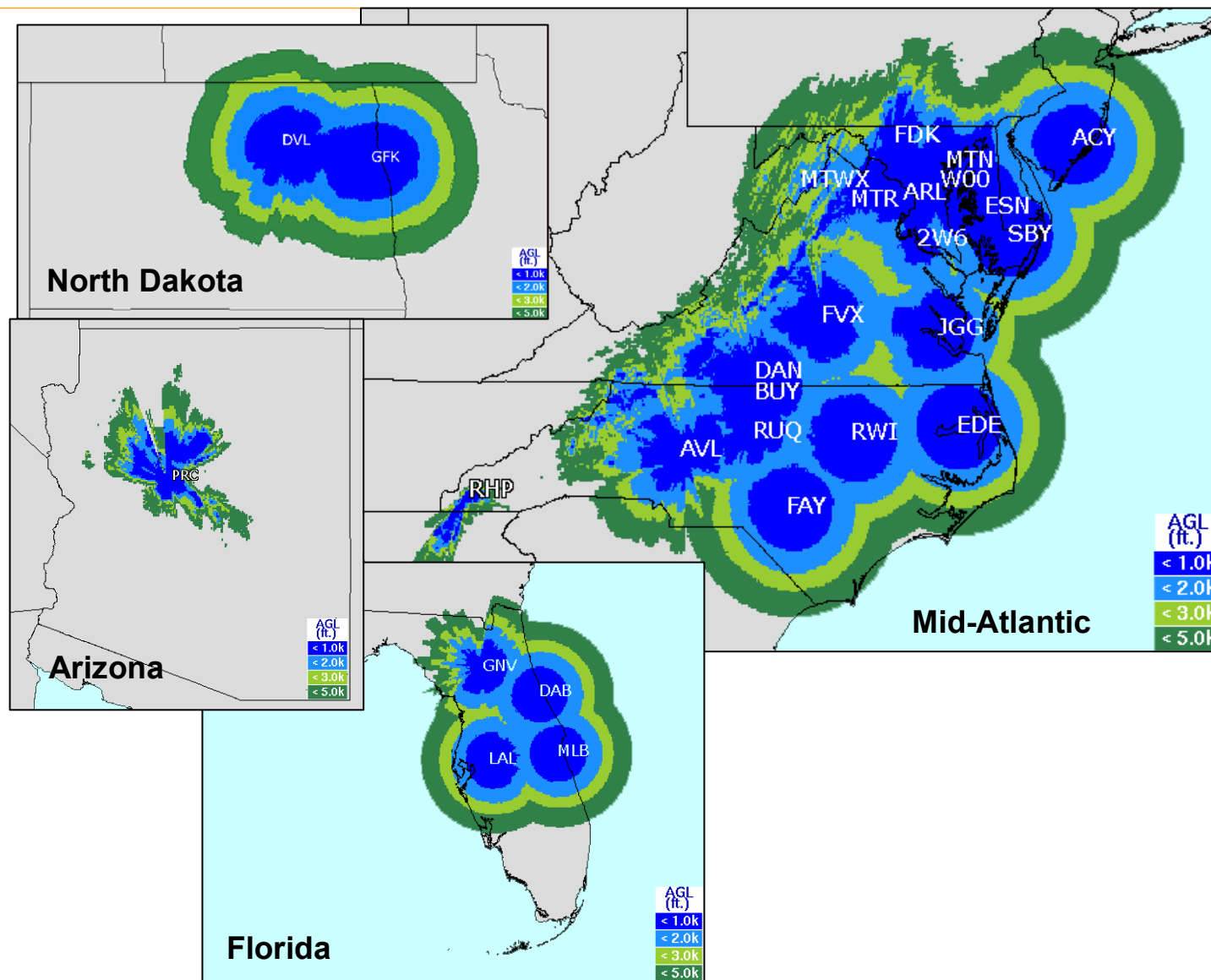
- 26 UAT Ground Stations Installed
- ~40 Additional UAT Radios on Order
- Installation of Some 1090ES Radios Planned in 2005

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Broadcast Services Implementation

Current Service Availability





Broadcast Services Implementation

www.flyadsb.com

Safe Flight 21 Broadcast Services Delivery - Microsoft Internet Explorer provided by MITRE

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Address http://www.flyadsb.com/ Go

Delivering Traffic, Weather and Airspace Information

ADS-B Services Delivery

ADS-B

Service Status
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Operational Applications
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Feedback / Questions

UNICOM

Broadcast Services
NOTAM
Request for Information on FIS-B Sources
Articles / News

The Federal Aviation Administration (FAA) is delivering Automatic Dependent Surveillance - Broadcast (ADS-B) and Broadcast Services that provide pilots with no fee, real-time weather, traffic, and non-control aeronautical information, such as Notices to Airmen (NOTAMs). This information may be available to pilots on a map display in the cockpit. An FAA certified digital data link provides high-speed exchange of Broadcast Services data between aircraft and ground systems. The FAA has established a policy supporting two data links for ADS-B: Mode-S 1090 extended squitter (1090ES) and Universal Access Transceiver (UAT). The UAT is currently being used by the FAA to deliver ADS-B services in along the East Coast, Southwest and upper Midwest of the conterminous United States (CONUS) and in Alaska ([Project Capstone](#)).



- Service Status
- Education & Training Material
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- User Feedback
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